

Patent Claims

1. Optical coupling device for injecting light  
between two optical waveguide end faces, the  
5 geometric position of the one optical waveguide  
end face, for example of an optical fibre, being  
capable of being varied with respect to the other  
optical waveguide end face, for example of an  
optical waveguide chip, with the aid of a  
10 variable-length element, which carries one of the  
two optical waveguides via a holding device and is  
fixed to the other optical waveguide by means of  
at least one holding block, characterized in that  
the variable-length element (8) is connected to a  
15 variable-length compensating element (10), whose  
length changes with temperature by the same amount  
but in the opposite sense as that of the variable-  
length element (8), and in that the variable-  
length compensating element (10) is fixed to a  
20 second holding block (6).
2. Coupling device according to Claim 1,  
characterized in that the length of the variable-  
length compensating element (10) is selected,  
25 taking its coefficient of expansion into account,  
such that the length of the variable-length  
compensating element (6) changes by the same  
amount but in the opposite sense as that of the  
variable-length element.
- 30 3. Optical coupling device for injecting light  
between two optical waveguide end faces, the  
geometric position of one optical waveguide end  
face, for example of an optical fibre, being  
35 capable of being varied with respect to the other  
optical waveguide end face, for example of an  
optical waveguide chip, with the aid of a  
variable-length element, which carries one of the  
two optical waveguides via a holding device and is

fixed to the other optical waveguide by means of  
at least one holding block, characterized in that  
the holding block has a U-shaped part (22) made of  
a material with the same coefficient of thermal  
expansion as the chip, in that a T-shaped part  
(32) made of a material with the same coefficient  
of thermal expansion as the chip is provided, in  
that the variable-length element (26) with the  
positive coefficient of thermal expansion is  
connected to the T-shaped part (32) at its foot  
(30) and to the U-shaped part at its base, and in  
that two variable-length elements (34, 36) with a  
positive coefficient of thermal expansion are  
fixed to the legs (40, 42) of the U-shaped part  
(22), which consist of the same material as the  
variable-length element (26) and have the same  
length as the latter and which, on one side, are  
fixed to the legs of the U-shaped part (22) and,  
on the other side, to the underside (38) of the  
crossbar (40) of the T-shaped part (32).

4. Coupling device according to one of Claims 1 to 3,  
characterized in that the variable-length elements  
consist of aluminium.
5. Coupling device according to one of Claims 1 to 4,  
characterized in that the material of the  
variable-length compensating elements is a glass  
ceramic with the same coefficient of thermal  
expansion, preferably the material of the chip.